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REMARKS

By way of this amendment, claims 1, 10, and 15 have been amended. Additionally, the specification has been amended to insert the application serial number of the identified related co-pending application, and drawing FIG. 11 is amended to correct a minor informality. Claims 1-17 remain present in this application. Applicants respectfully request reconsideration and allowance of the present application.

In the Office Action, claims 1, 6-10, 12, 13, and 15-17 were rejected under 35 U.S.C. §103(a) as being unpatentable by Hudecek et al. (U.S. Patent No. 6,289,207) in view of Tsuji et al. (U.S. Patent No. 6,385,261). Applicants have amended independent claims 1 and 10 to clarify that the controller determines an average value of the detected signal strength of the received radio wave signals that exceed a minimum signal strength level. Applicants submit that the independent claims, as amended, and the claims dependent thereon would not have been obvious in view of the combination of Hudecek et al. and Tsuji et al. for the reasons discussed below.

Before discussing the rejections, it is important to appreciate Applicants' invention and the advantages realized therefrom. The present invention provides for a tuneable radio and method for automatically adjusting the seek sensitivity of a radio, particularly a mobile radio. The tuneable radio includes a radio receiver for receiving broadcast radio wave signals, a tuner adjustable for selecting from a plurality of radio wave signal channels, and a signal detector for detecting signal strength of the received radio wave signals. The radio also has a seek input for initiating a seek operation to seek a radio wave signal channel having a detected signal strength greater than a seek sensitivity threshold. The radio further includes a controller determining an average value of the detected signal strength of the received radio wave signals that exceed a minimum signal strength level. The controller adjusts the seek sensitivity threshold based on the average value.

By providing automatic adjustment of the seek sensitivity according to the present invention, the radio is automatically adjusted to provide for enhanced radio station reception

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for users, which is particularly useful in automotive vehicles that travel throughout regions of varying radio station concentrations. The radio advantageously allows for the seek sensitivity adjustment to increase the seek sensitivity threshold in geographic regions having higher concentrations of available stations, such as urban regions, to reduce the number of signal channels that are selected during a seek operation. Similarly, the seek sensitivity threshold is decreased in geographic regions having lower concentrations of available radio stations, such as rural regions, to increase the number of signal channels that are selected during a seek operation. Thus, an enhanced radio seek function is provided by the present invention.

The Hudecek et al. patent discloses a computerized radio receiver having an RF tuner 10, frequency selector 19, and a programmed computer that functions as a control system 100 to control the tuner and a display screen to present data and user selectable inputs to the user. The Examiner stated that Hudecek et al. discloses a tuneable radio with adjustable seek sensitivity comprising a controller for automatically adjusting the squelch level (seek sensitivity threshold) as a function of received signal levels, citing FIG. 3 and column 20, lines 23-39. Referring to column 20, lines 23-39 of Hudecek et al., Applicants note that the control system 100 displays the present squelch level and can be programmed to automatically vary the squelch level, e.g., as a function of both background level and instantaneous signal level. Thus, if a strong signal is being received much stronger than background noise around that frequency, the squelch level may shift to a relatively high level. According to one possibility, the squelch level is automatically adjusted to a level higher than the average noise level by a (user programmable) percentage of the signal strength above the average noise level. The automatic squelch level variation may be operative while tuned to a particular frequency and/or while changing frequencies (e.g., when scanning).

The Tsuji et al. patent discloses an impulse noise detector and noise reduction system which employs a comparator comparing data value D stored in memory with a threshold set by an averager 20 and multiplier 21 to drive an impulse noise detection signal to an active logic level if the threshold is exceeded. The averager 20 takes the average of data values spanning a time interval preceding and following the data value D compared by the comparator. The Examiner stated that Hudecek et al. fails to disclose a squelch level as determined based on the

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average value of received signals, and further stated that using such average value for computing a dynamic threshold for a signal detection would have been obvious to one skilled in the art of signal detection as disclosed by Tsuji et al.

In contrast to the Hudecek et al. and Tsuji et al. patents, Applicants' claimed invention, as recited in claim 1, is directed to a tuneable radio having an adjustable seek sensitivity threshold. The radio comprises a radio receiver for receiving broadcast radio wave signals, a tuner adjustable for selecting from a plurality of radio wave signal channels, and a signal detector for detecting signal strength of the received radio wave signals. The radio also has a seek input for initiating a seek operation to seek a radio wave signal channel having a detected signal strength greater than a seek sensitivity threshold. The radio further includes a controller determining an average value of the detected signal strength of the received radio wave signals that exceed a minimum signal strength level. The controller adjusts the seek sensitivity threshold based on the average value. Independent claim 10 recites a method of adjusting seek sensitivity in a tuneable radio including the steps of calculating an average value of the detected signal strength of the plurality of received radio wave signals that exceed a minimum signal strength level, and adjusting a seek sensitivity threshold based on the average value.

Section 2143 of the latest revision of the *Manual of Patent Examining Procedures* (MPEP) states the following regarding the requirements for establishing a *prima facie* case of obviousness:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure. *In re Vaeck*, 947 Fed 2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). [emphasis added]

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Neither of the references to Hudecek et al. and Tsuji et al. teaches or suggests Applicants' claimed radio and method as recited in independent claims 1 and 10, respectively. Hudecek et al. does not disclose a controller determining an average value of the detected signal strength of the received radio wave signals that exceed a minimum signal strength level, and adjusting the seek sensitivity threshold based on the average value. Instead, Hudecek et al. controls the displayed squelch level by automatically varying the squelch level as a function of background level and instantaneous signal level. The Hudecek et al. patent appear to change the squelch level as a function of the background noise. This is completely different from Applicants' claimed invention in which the seek sensitivity threshold that is used during a seek operation is adjusted based on an average value of signal strength of a plurality of received radio wave signals, each of which exceeds a minimum signal strength level. Thus, only those received radio wave signals that exceed a minimum signal strength threshold are used to determine the average value which is then used to adjust the seek sensitivity threshold. This allows for the seek sensitivity threshold to adapt to select a reduced number of signal channels in regions having a higher concentration of available radio stations, and to select an increased number of signal channels in regions having a lower concentration of available radio stations, all to the convenience of the radio user. Nowhere does Hudecek et al. or Tsuji et al. teach or even suggest selecting a plurality of received radio wave signals that exceed a minimum signal strength level to determine an average value and controlling the seek sensitivity threshold based on that average value.

The Tsuji et al. reference is cited by the Examiner as a secondary reference merely for disclosure of using an average value for computing a dynamic threshold for signal detection. Nowhere does Tsuji et al. teach or even suggest determining an average value of detected signal strength of received radio wave signals that exceed a minimum signal strength level for use in a tuneable radio that automatically adjusts the seek sensitivity threshold. Applicants further submit that there is no suggestion or motivation in either reference to combine the average value computation of Tsuji et al. with the squelch control of Hudecek et al. Nonetheless, the attempted combination of Tsuji et al. and Hudecek et al. would not arrive at Applicants' claimed invention as recited in independent claims 1 and 10.

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Accordingly, it is respectfully submitted that claims 1 and 10, as amended, and the claims dependent thereon would not have been rendered obvious to one of ordinary skill in the art of the time of the present invention in view of the combination of Hudecek et al. and Tsuji et al., and the rejection of claims 1, 6-10, 12, 13, and 15-17 as obvious based on the combination of Hudecek et al. and Tsuji et al. should therefore be withdrawn.

Claims 2-5, 11, and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable by Hudecek et al. in view of Tsuji et al., and further in view of Morande et al. (U.S. Patent No. 6,526,628). Applicants submit that these dependent claims are likewise allowable for the reasons set forth above with respect to the rejection of independent claims 1 and 10 as discussed, from which these claims depend.

It is also worth noting that the Morande et al. patent was cited by the Examiner for disclosing a TCS frequency determination method for scanning a plurality of RF channels, wherein the average value of a predetermined number of signals having the highest signal strength are obtained by iteratively filtering out-lying data (i.e., noises) of a set of sampled data. Applicants submit that Morande et al., alone or in combination with Hudecek et al. and Tsuji et al., does not teach or suggest Applicants' claimed invention as recited in independent claims 1 and 10 and the claims dependent thereon, and thus this rejection should likewise be withdrawn.

The remaining prior art references made of record in the present Office Action were not applied to the claims. Applicants have reviewed these references and agree with the Examiner that such references do not teach or suggest Applicants' claimed invention.

Included herewith is a marked-up annotated sheet showing FIGS. 10B and 11 and correction to FIG. 11. Also submitted is a formal, corrected replacement sheet showing the same figures with the formal correction. Applicants respectfully request approval of the drawing figure correction.

By way of the foregoing discussion, Applicants have demonstrated that claims 1-17, as amended, would not have been rendered obvious in view of the cited combinations of Hudecek et al., Tsuji et al., and Morande et al., and claims 1-17, as amended, should therefore be allowed, which action is respectfully requested. If the Examiner has any questions regarding

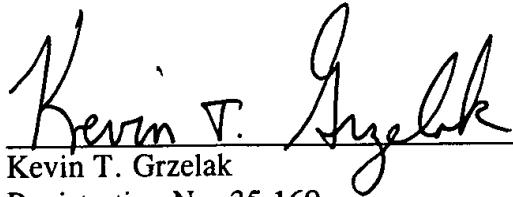
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patentability of these claims, the Examiner is encouraged to contact Applicants' undersigned attorney to discuss the same.

Respectfully submitted,

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Annotated Sheet Showing Changes

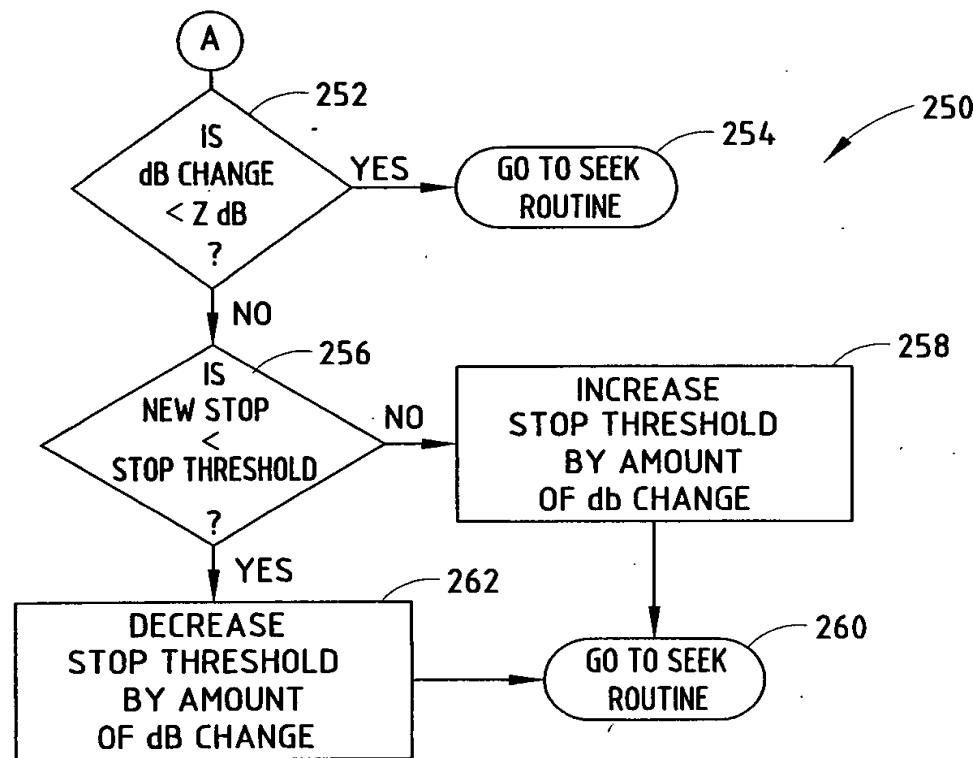


FIG. 10B

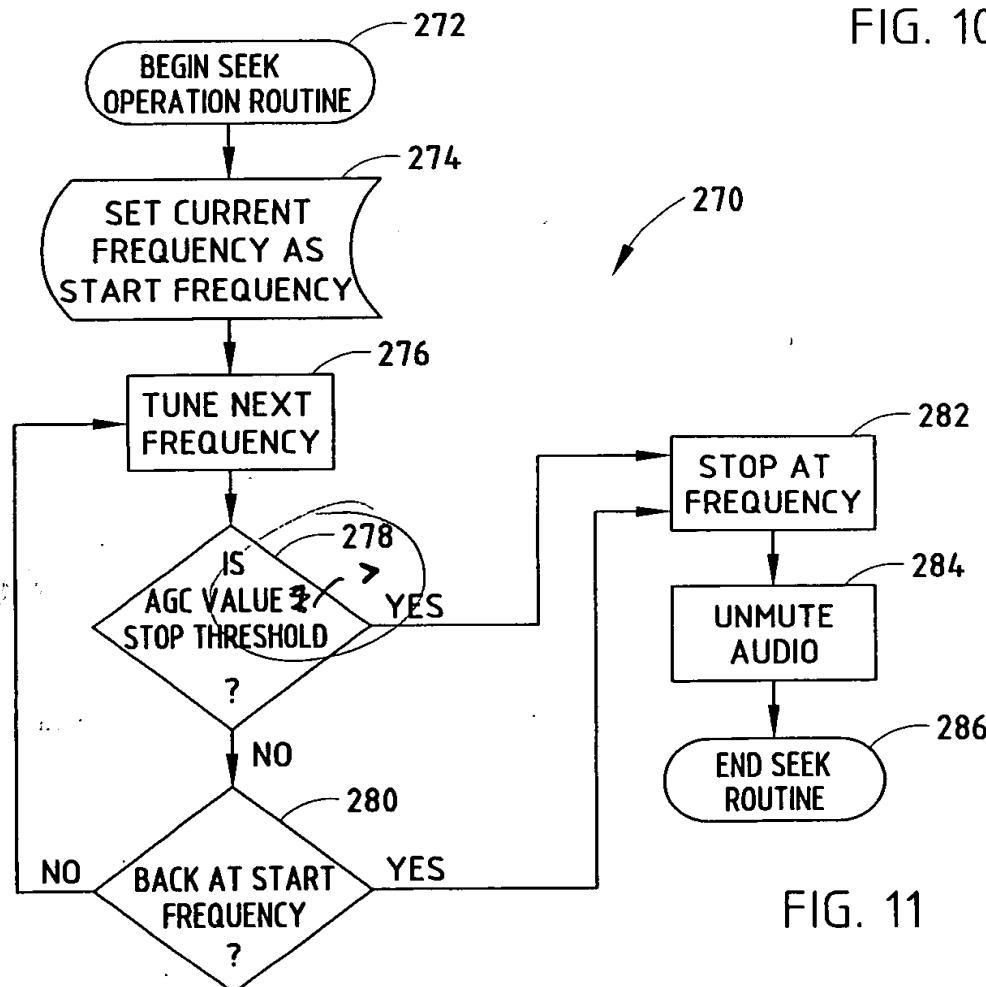


FIG. 11